

REMARKS

Claims 1-10 and 12-13 were pending. By way of the present Reply, claims 1-2 and 13 have been amended and claims 16-17 have been added. Claims 1-10, 12-13 and 16-17 remain pending and are submitted for reconsideration.

Support for the amendments to claims 1-2 and 13 and new claims 16-17 can be found in the application as filed. For example, the Office at least is directed to page 3, line 4 – page 6, line 6 and page 7, line 25 – page 9, line 2 of the application as filed.

Rejections under 35 U.S.C. § 103 – Neerinck and Moronuki

Claims 1-10 and 12-15 are rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,228,471 (hereinafter “Neerinck”) in view of U.S. Patent No. 6,821,497 (hereinafter “Moronuki”), which cites to JP 10-130865. Claims 14-15 have been cancelled. The rejection of claims 14-15 is, therefore, moot. Neerinck in view of Moronuki fails to disclose, teach or suggest each and every claim recitation.

For example, Neerinck in view of Moronuki fails to disclose, teach or suggest a layered structure that comprises, among other things “a first intermediate layer, said first intermediate layer consisting of a titanium based coating of at least one of Ti, TiC, TiN, and TiCN;- a second intermediate layer deposited on top of said first intermediate layer, said second intermediate layer comprising a diamond-like nanocomposite composition; and -a diamond-like carbon layer deposited on top of said second intermediate layer” as recited in claim 1; claim 13 recites similar and/or analogous elements to claim 1. Specifically, in accordance with M.P.E.P. § 716.02, Applicants’ claimed invention possesses “properties [that] differ to such an extent [from Neerinck and Moronuki] that the difference is really unexpected.” M.P.E.P. § 716.02. Applicants do not concede that the claimed invention is prima facie obvious.

Applicants Have Compared the Claimed Invention to the Closest Prior Art and Have Shown Unexpected Results

To show unexpected results Applicants “must compare the claimed subject matter with the closest prior art” and the evidence relied upon must establish “that the differences in

results are in fact unexpected and unobvious and of both statistical and practical significance.” M.P.E.P. §§ 716.02(b), (e).

Applicants compared the claimed invention to the closest prior art. The Office identified Neerinck as the closest prior art during a teleconference with Applicants’ agent. The Office asserts that Neerinck teaches DLN+DLC. Final Office Action at 2. Applicants’ compared Ti+DLN+DLC – one example of Applicants’ claimed invention – to DLN+DLC in their application. Additionally, Applicants compared Ti+DLN+DLC to Ti+DLC; the Office asserted in the teleconference that the prior art, discussed in Moronuki, teaches Ti+DLC. A table summarizing Ti+DLN+DLC as compared to DLN+DLC and Ti+DLC is hereto provided. Pages 7-9, of the application as filed, provide support for the table and the table is annotated to show where specific support, for each fact in the table, is in the application.

Table 1

Coating type	Performance					
	Adhesion HF value	Adhesion Critical load to obtain delamination	Scratch resistance	Performance in high shear applications	Performance in high impact loading applications	Life time in high impact aluminum metal forming application
(a) DLN+DLC <i>(pg. 7 of app.)</i>	3-5 <i>(pg. 8 of app.)</i>	15-30 N <i>(pg. 8 of app.)</i>		- <i>(pg. 8 of app.)</i>	- <i>(pg. 8 of app.)</i>	
(b) Ti+DLC <i>(pgs. 7-8 of app.)</i>	1-3 <i>(pg. 8 of app.)</i>	15-27 N <i>(pg. 8 of app.)</i>		- <i>(pg. 8 of app.)</i>	+- <i>(pg. 8 of app.)</i>	
(c) Ti+DLN+DLC <i>(pg. 8 of app.)</i>	1-3 <i>(pg. 8 of app.)</i>	22-35 N <i>(pg. 8 of app.)</i>	+ <i>(pg. 8 of app.)</i>	++ <i>(pg. 8 of app.)</i>	++ <i>(pg. 8 of app.)</i>	3-4 times the life time of coating type (b) <i>(pgs. 8-9 of app.)</i>

The table shows that coating type (c) exhibits results that are unexpected, unobvious and of both statistical and practical significance. Specifically, coating type (c) displays better adhesion attributes than coating type (a) and displays the ability to withstand a greater critical load before delamination occurs than both coating types (a) and (b). Coating type (c) also displays better scratch resistance than coating types (a) and (b). Additionally, coating type (c) is the only coating type that displays excellence in both high shear applications and high

impact loading applications. Moreover, the life time of coating in high impact aluminum metal forming applications of coating type (c) is 3 to 4 times higher than the lifetime of coating type (b); increased life time means less production steps, maintenance and costs. For example, the better the performance of the coating, the better the wear and/or corrosion resistance, thereby increasing the life time of the coated object.

Applicants Unexpected Results are Commensurate in Scope with the Claimed Invention

Applicants' unexpected results are "commensurate in scope with the claims which the [unexpected results] evidence is offered to support." M.P.E.P. § 716.02(d). The Office asserts that Applicants "instant claims are broader than a mere disclosure of Ti+DLN+DLC [and that for] these results to be considered unexpected...Applicants will need to amend the instant claims as such to reflect those which they have proper unexpected results for." Final Office Action at 2. In response to the Action, Applicants amended the claims by limiting the first intermediate layer to one that consisted of a titanium based coating of at least one of Ti, TiC, TiN, and TiCN. Applicants' evidence of unexpected results compares Ti+DLN+DLC to the closest prior art. As evident from claim 1, all of the claimed coatings are titanium based.

In Showing Unexpected Results, Applicants Need Not Compare the Claimed Invention to a Combination of References

The Office incorrectly requests that Applicants compare the claimed invention to the combination of Neerinck and Moronuki to show unexpected results by asserting that "Applicants are requested to hereby show that their structure of Ti+DLN+DLC would have a result superior and unexpected to that of the combination of Neerinck and Moronuki" and "it cannot be readily gleaned how the combination of Neerinck and Moronuki does not result in Ti+DLN+DLC... the Applicants seem to be attacking both of the references individually and not in combination of them in this attempt to show an unexpected result." Advisory Action at 2 and Final Office Action at 2-3. The Office is incorrect. Applicants must compare the claimed invention with the closest prior art, but Applicants are not required to compare the claimed invention with what is allegedly suggested by a combination of references relied upon to reject the claims under 35 U.S.C. § 103. Doing so "would be requiring comparison

of the results of the invention with the results of the invention.” M.P.E.P. § 716.02(e)(III). In other words, Applicants are not required to attack Neerincx and Moronuki in combination to show an unexpected result. Instead, Applicants are merely required to compare the claimed invention with the closest prior art. As previously provided, Applicants did just that; Applicants separately compared Ti+DLN+DLC to DLN+DLC.

For all of the aforementioned reasons, the rejection of claims 1 and 13 is improper. Claims 2-10 and 12 depend from claim 1 and are allowable for at least the reasons set forth above, without regard to the further patentable elements contained in these claims.

Claim 2

Claim 2 is additionally allowable because it further defines that the first intermediate layer consists of Ti. As previously provided, unexpected results must be “commensurate in scope with the claims which the [unexpected results] evidence is offered to support.” M.P.E.P. § 716.02(d). Assuming that the Office finds that the unexpected results are not commensurate in scope with claim 1 because claim 1 recites “a titanium based coating of at least one of Ti, TiC, TiN, and TiCN,” claim 2 limits the first intermediate layer to consisting of Ti. The unexpected results shown for Ti+DLN+DLC compare Ti+DLN+DLC to DLN+DLC and Ti+DLC. Accordingly, as the first intermediate layer in claim 2 is limited to Ti, and Ti+DLN+DLC is compared to the closest prior art, claim 2 is commensurate in scope with the claims. Thus, for at least this additional reason the rejection of claim 2 should be withdrawn.

New Claims

New claims 16-17 have been added. Support for claims 16-17 can be found in the application as filed. For example, please at least see page 3, line 4 – page 6, line 6 and page 7, line 25 – page 9, line 2 of the application as filed.

Claim 16 contains similar and/or analogous elements to claim 1 and is allowable, therewith, for at least the aforementioned reasons. Claim 17 depends from claim 16 and is allowable for at least the reasons set forth above, without regard to the further patentable elements contained in claim 17.

CONCLUSION

Applicants believe that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by the credit card payment instructions in EFS-Web being incorrect or absent, resulting in a rejected or incorrect credit card transaction, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicants hereby petition for such extension under 37 C.F.R. §1.136 and authorize payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

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